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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/015,040 | 12/11/2001 | Ming-Chang Liu | 80398.P467 | 6421 |

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EXAMINER

AN, SHAWN S

ART UNIT PAPER NUMBER

2613

DATE MAILED: 03/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/015,040

Applicant(s)

LIU ET AL.

Examiner

Shawn S An

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 9, 10, 12, 14-19, 21, 22, 24, 26-28 and 30-32 is/are rejected.
- 7) ☒ Claim(s) 6, 8, 11, 13, 20, 23, 25 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/04/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. As per Applicants' instruction as filed on 10/29/04, claims 1, 12-15, 17-18, 21, and 26 have been amended, and claims 30-32 have been newly added.

Response to Remarks

2. Applicants' arguments with respect to claims 1-29 with the exception of objected claims 6, 8, 11, 13, 20, 23, 25, and 29, have been carefully considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3, 14-17, 26, and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al (6,735,253 B1) in view of Uz et al (5,682,204).

Regarding claims 1, 17, 26, and 30, Chang et al discloses a video device, a computer readable medium (col. 7, lines 53-59), and a method for determining a scene change in a video sequence, comprising:

an input (Fig. 7) configured to receive a first (reference or I), a second (P), and a third video frame (B); and

a processor (Fig. 1, 110) configured to determine a first set of motion vectors between the first video frame and the second video frame and a second set of motion vectors using the third video frame (Fig. 2, elements 220, 230), and

means for comparing a ratio of the first and the second sets of motion vectors to a first threshold to determine whether a scene change has occurred (col. 8, lines 51-65).

Chang et al does not particularly disclose the occurrence of a scene change causing the first frame to be encoded as a different type of frame.

However, Uz et al teaches a video encoder which uses Intra coding, when an activity level of a current macro-block is smaller than a threshold level, and the occurrence of a scene change causing the first frame to be encoded as a different type of frame (col. 11, lines 34-48).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a video device and a method for determining a scene change in a video sequence as taught by Chang et al to incorporate the teaching as above as taught by Uz et al so as to efficiently control the bit budget, thereby improving video picture quality.

As per preamble, the recitation "during encoding of the video sequence" and/or "to encode a video sequence" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Regarding claim 2, Chang et al discloses the first frame (I) preceding the second frame (P), wherein the second frame precedes the third frame (B) (Fig. 7).

Regarding claim 3, Chang et al discloses the third frame (B) preceding the first frame (I), wherein the second frame (P) precedes the first frame (I) (Fig. 7).

Regarding claims 14 and 31, Chang et al discloses a new GOP (Fig. 7) at a point after the scene change (Fig. 2, 240).

Regarding claims 15 and 32, Chang et al discloses converting the I-frame to a P-frame (Fig. 10, 1040; Duplicate P frame) and converting a following P-frame to an I-frame (1030).

Regarding claim 16, it is considered an obvious design choice to heuristically determine the threshold value as long as the result or the outcome is favorable.

5. Claims 4-5, 7, 9-10, 12, 18-19, 21-22, 24, and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al and Uz et al as applied to claims 1, 17, and 26 above, and further in view of Linzer et al (6,108,039).

Regarding claims 4, 9, 18, 21, and 27, Chang et al discloses the first, the second, and the third frame, wherein the each frame comprises of two (top and bottom) fields (NTSC standard) (col. 1, lines 40-45).

The combination of Chang et al and Uz et al does not particularly disclose the first set of motion vectors comprising a first subset of motion vectors between the first field of first frame and the first field of the second frame, and a second subset of motion vectors between the second field of first frame and the second field of the second frame; and

the second set of motion vectors comprising a first subset of motion vectors between the first field of first/second frame and the first field of the third frame, and a second subset of motion vectors between the second field of first/second frame and the second field of the third frame.

However, Linzer et al teaches the first set of motion vectors comprising a first subset of motion vectors between the first field of first frame and the first field of the second frame, and a second subset of motion vectors between the second field of first frame and the second field of the second frame; and

the second set of motion vectors comprising a first subset of motion vectors between the first field of second frame and the first field of the third frame, and a second subset of motion vectors between the second field of second frame and the second field of the third frame (Figs. 4-5).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a video device and a method for determining a scene change in a video sequence as taught by Chang et al to incorporate the teachings as above as taught by Linzer et al so as improve on the motion estimation technique, thereby reducing computational requirements without a substantial effect on picture quality, and providing optimal motion estimation.

Regarding claims 5, 7, 10, 12, 19, 22, 24, and 28, since Chang et al discloses comparing a ratio of the first and the second sets of motion vectors to a first threshold to determine whether a scene change has occurred in frames set, it would have been obvious to compare two ratio of the two subset (top and bottom) of the (first and second) sets of motion vectors, and determine whether a scene change has occurred between frames/fields (two fields converts to one frame), if the first and the second ratio are larger than the first threshold, since each frame comprises of two (top and bottom) fields (NTSC standard).

Allowable Subject Matter

6. Claims (6, 8, 11, 13), (20, 23, 25), and 29 are objected to as being dependent upon a rejected base claims 1, 17, and 26, respectively, but would be allowable: if either claim 6 or claim 8 or claim 11 or claim 13 is rewritten in independent form including all of the limitations of the base claim 1 and any intervening claims; and if either claim 20 or claim 23 or claim 25 is rewritten in independent form including all of the limitations of the base claim 17 and any intervening claims; and if claim 29 is rewritten in independent form including all of the limitations of the base claim 26 and any intervening claims.

Dependent claims 6, 8, 11, 13, 20, 23, 25, and 29, recite the novel features in which the art of records fail to anticipate or make obvious.

Accordingly, if the amendments are made to the claims listed above, and if rejected claims are canceled, the application would be placed in condition for allowance.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

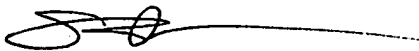
§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to *Shawn S An* whose telephone number is 571-272-7324.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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10. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

A handwritten signature in black ink, appearing to read 'SHAWN AN', followed by a long horizontal line.

**SHAWN AN
PRIMARY EXAMINER**

3/30/05